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Panneri

(10) **Patent No.: US 6,807,798 B2**
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(54) **METHOD OF BANDING**

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(73) Assignee: **A. J. Panneri Enterprises, Inc.**, Cheektowaga, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/391,840**

(22) Filed: **Mar. 19, 2003**

(65) **Prior Publication Data**

US 2003/0172620 A1 Sep. 18, 2003

Related U.S. Application Data

(62) Division of application No. 09/732,662, filed on Dec. 8, 2000, now Pat. No. 6,557,326.

(51) **Int. Cl.**[7] **B65B 27/06**; B65B 13/02
(52) **U.S. Cl.** **53/586**; 100/25
(58) **Field of Search** 53/586, 589, 590, 53/399, 419, 466, 210, 526, 229, 371, 372, 409, 204; 100/10, 25, 26

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Previous fixture, no date.

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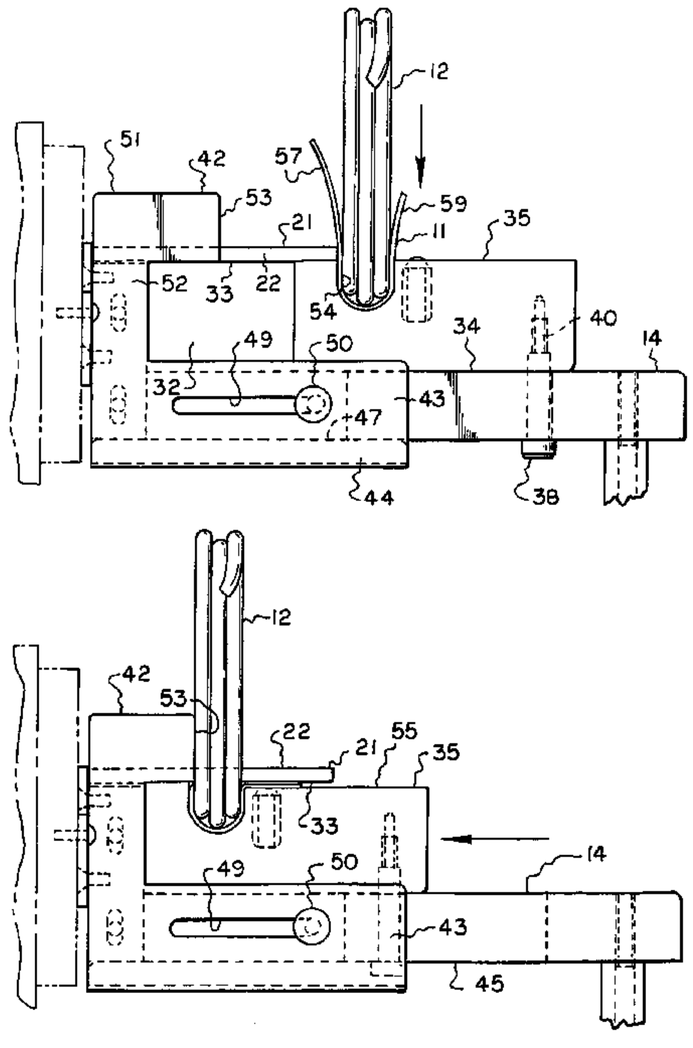
Assistant Examiner—Hemant M Desai
(74) *Attorney, Agent, or Firm*—Joseph P. Gastel

(57) **ABSTRACT**

A banding fixture including a body having a horizontal opening therein, a carriage movable into and out of the horizontal opening, a recess in the carriage, and the carriage with the recess therein movable into the horizontal opening with a surface in the carriage in underlying near contiguous relationship to an undersurface of a plate on the body. A method of banding a workpiece including the steps of pressing a workpiece overlying a band into a recess in a member, and moving the member relative to a surface so that the ends of the band which extend beyond the workpiece are pressed together in overlapping relationship as the member passes in contiguous relationship to the surface.

6 Claims, 6 Drawing Sheets



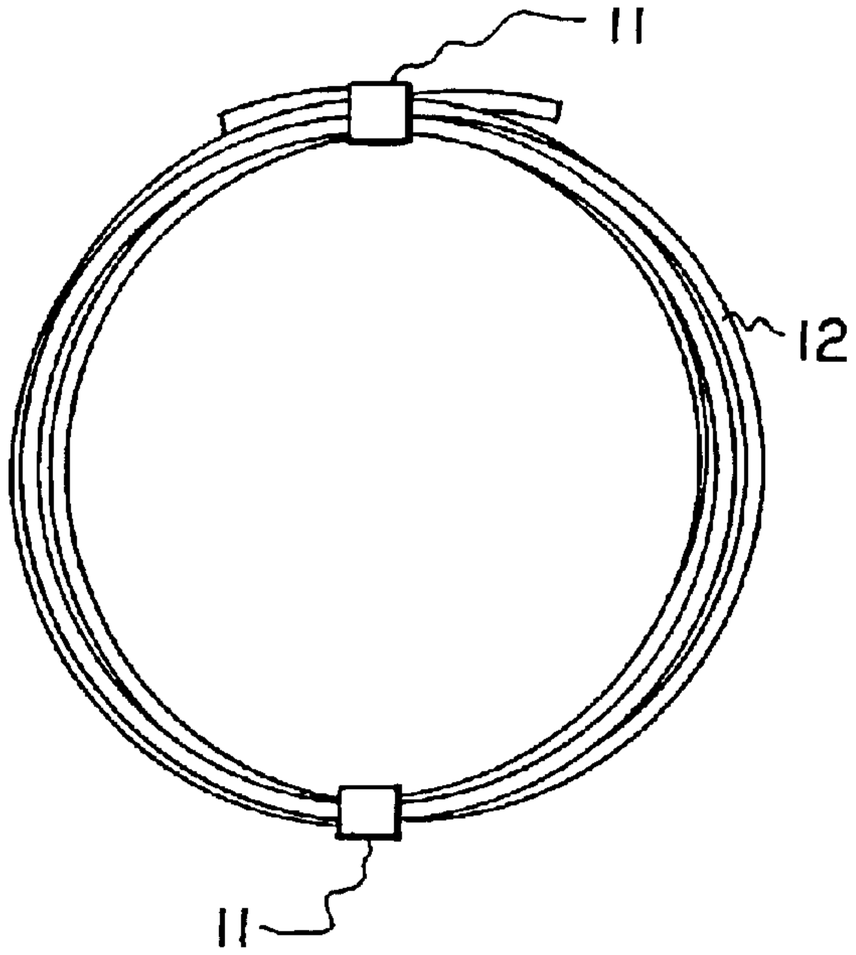


FIG. 1

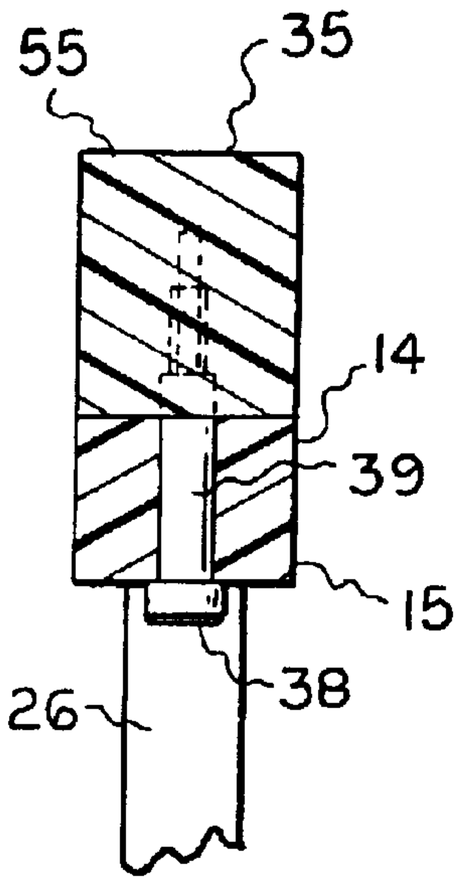


FIG. 5

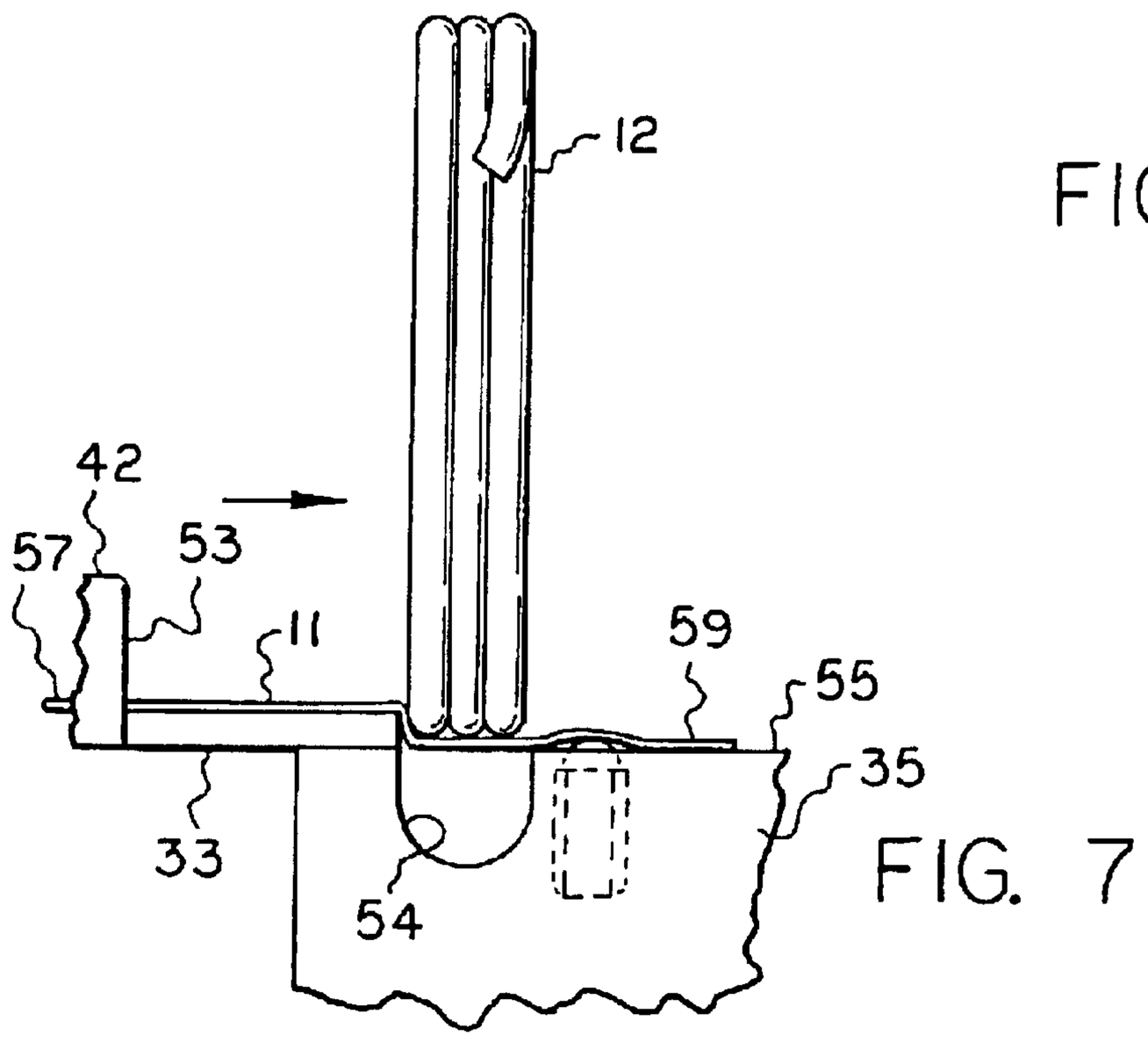


FIG. 7

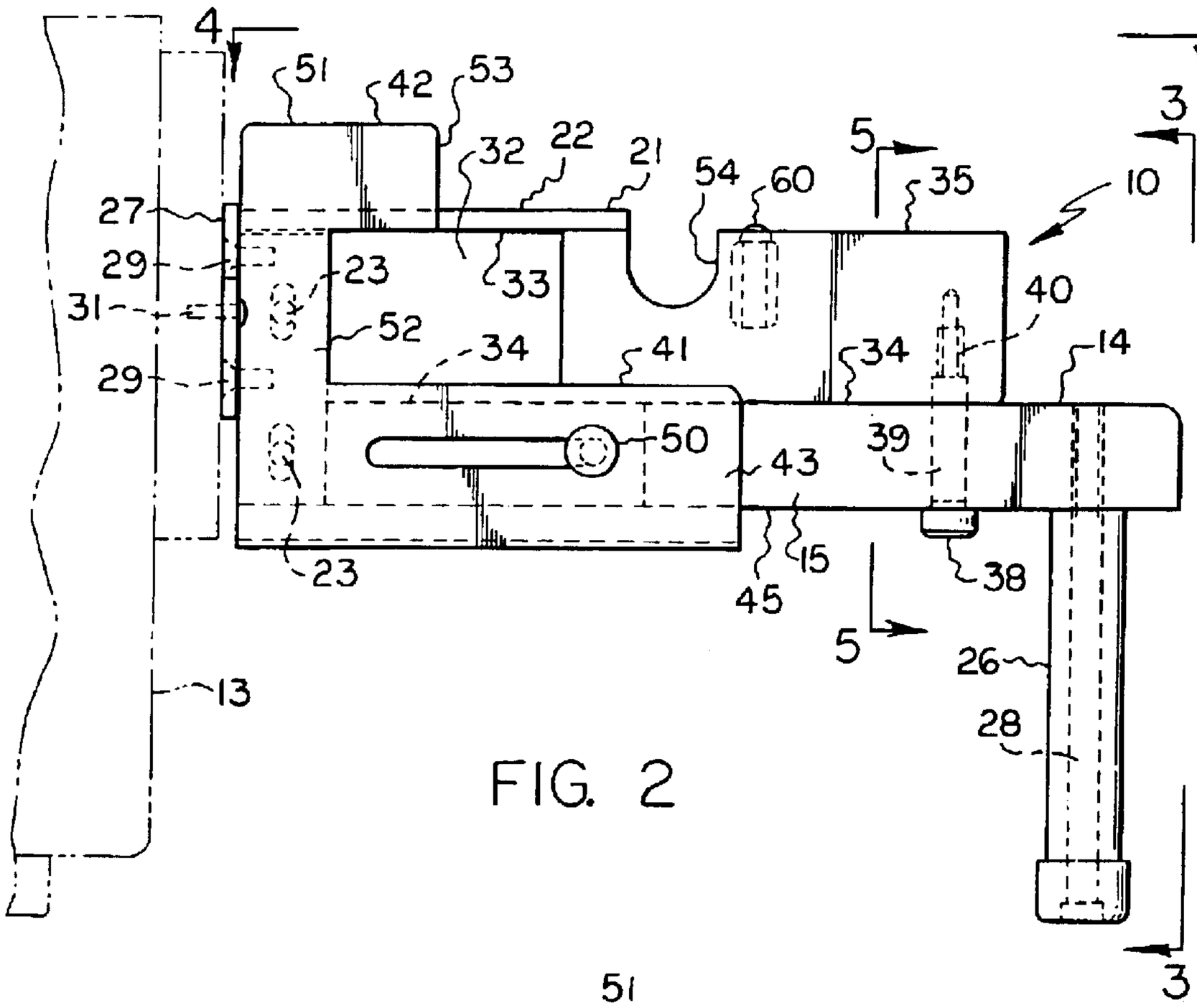

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FIG. 2

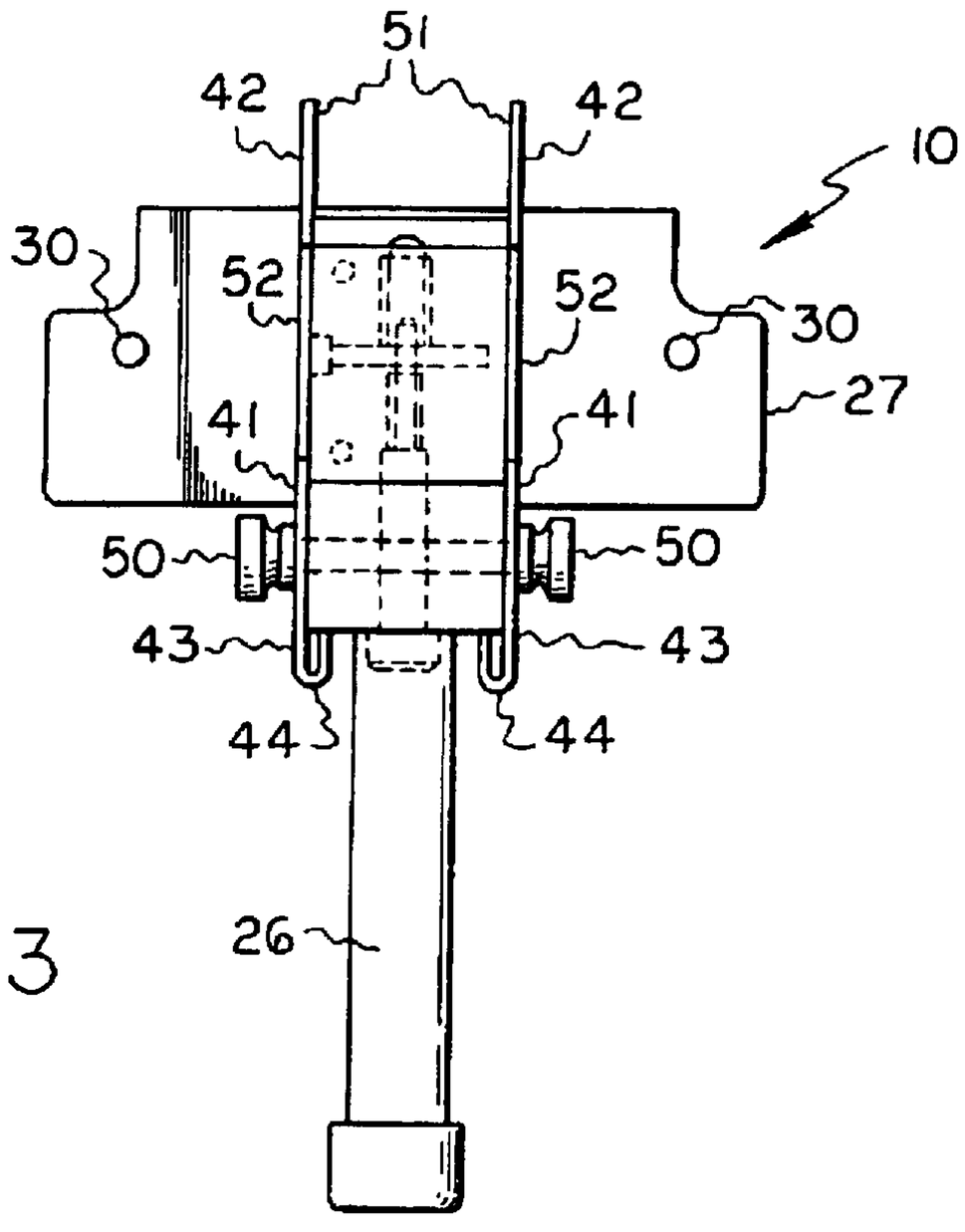
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FIG. 3

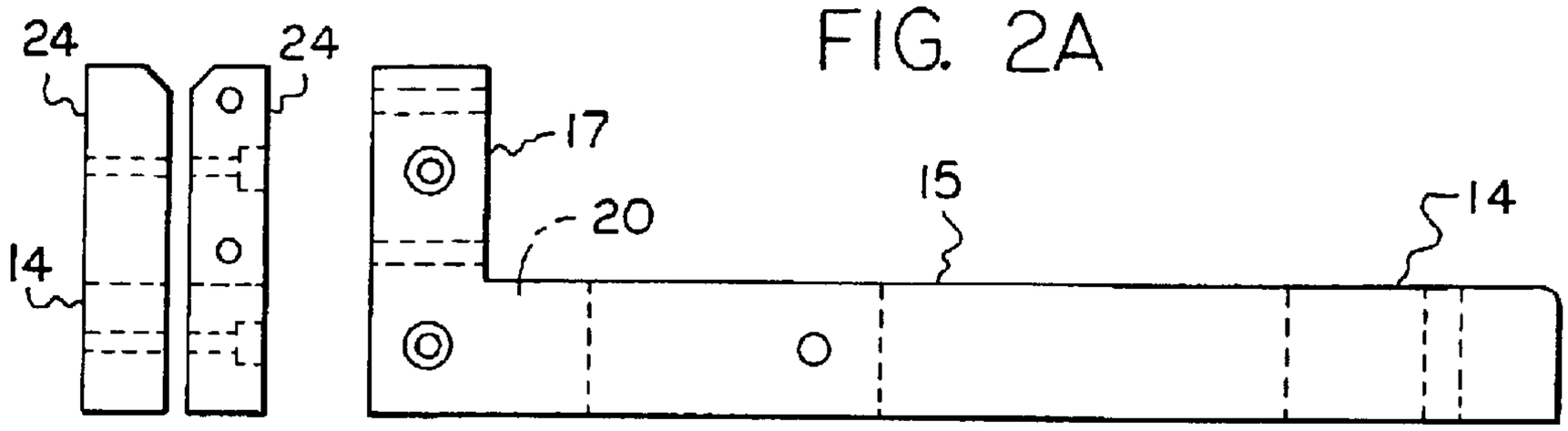

FIG. 2A

FIG. 2C

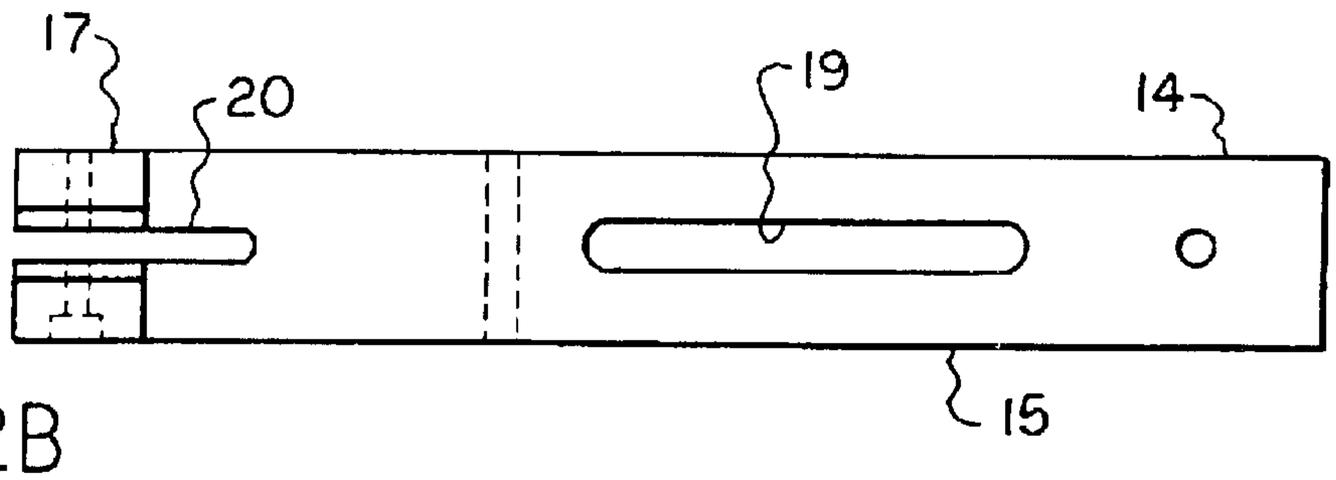

FIG. 2B

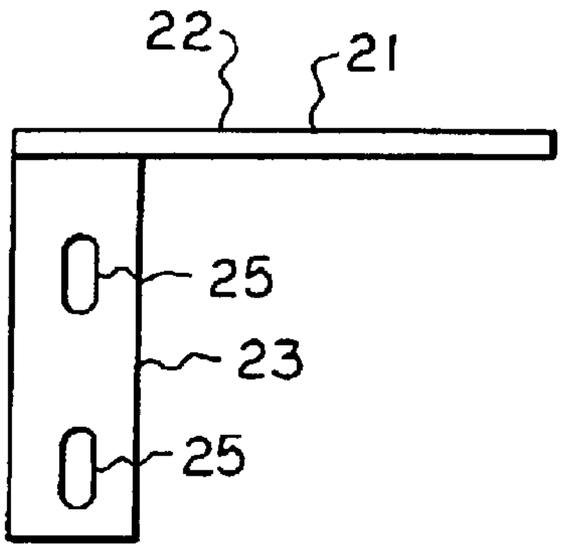

FIG. 4A

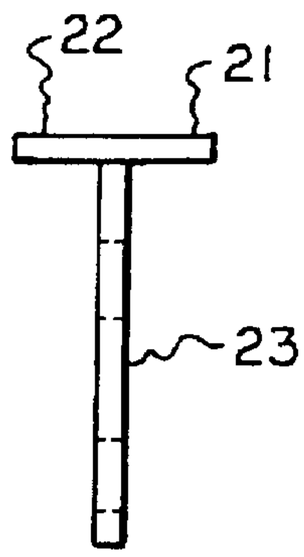

FIG. 4B

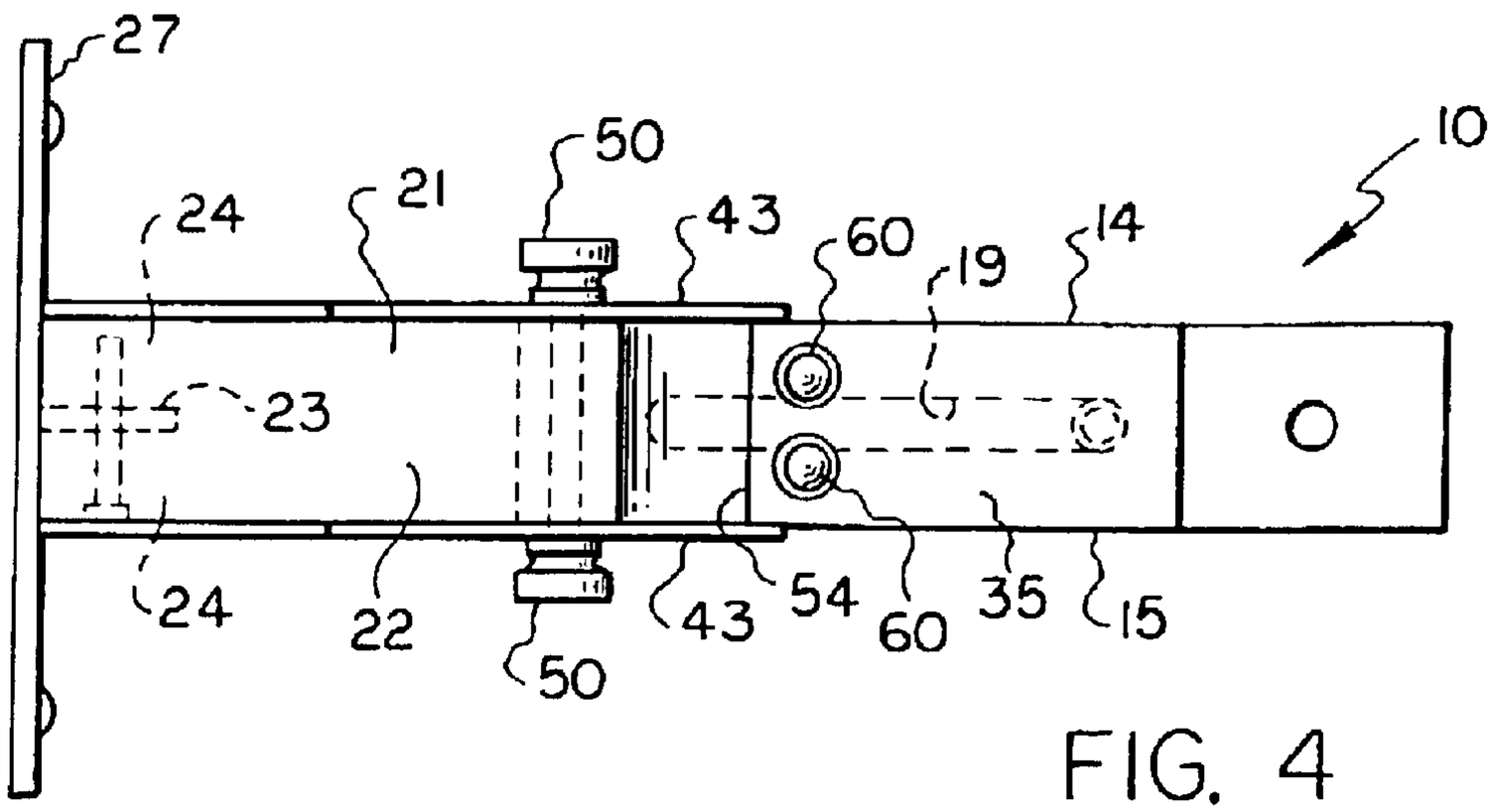
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FIG. 4

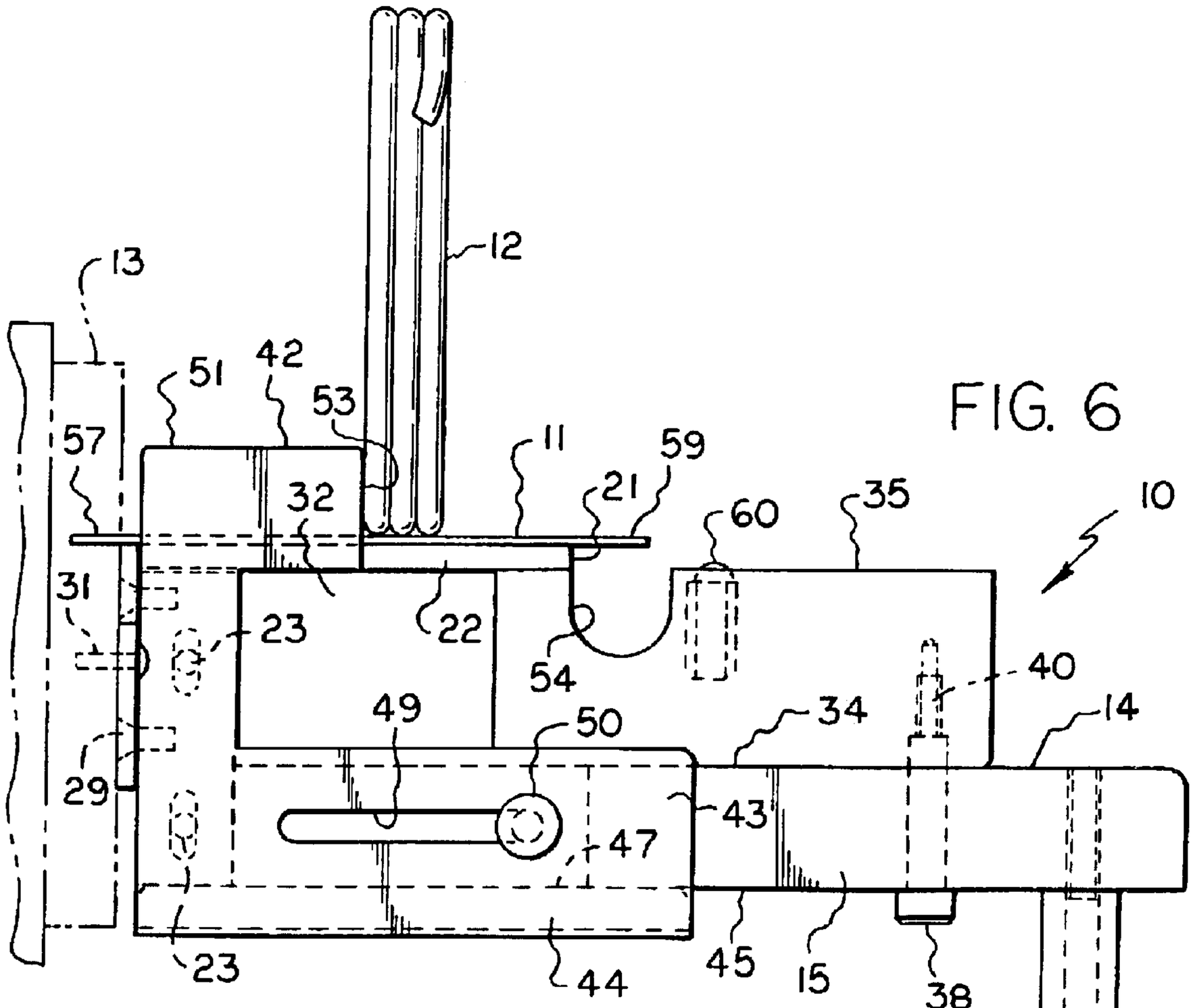
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FIG. 6

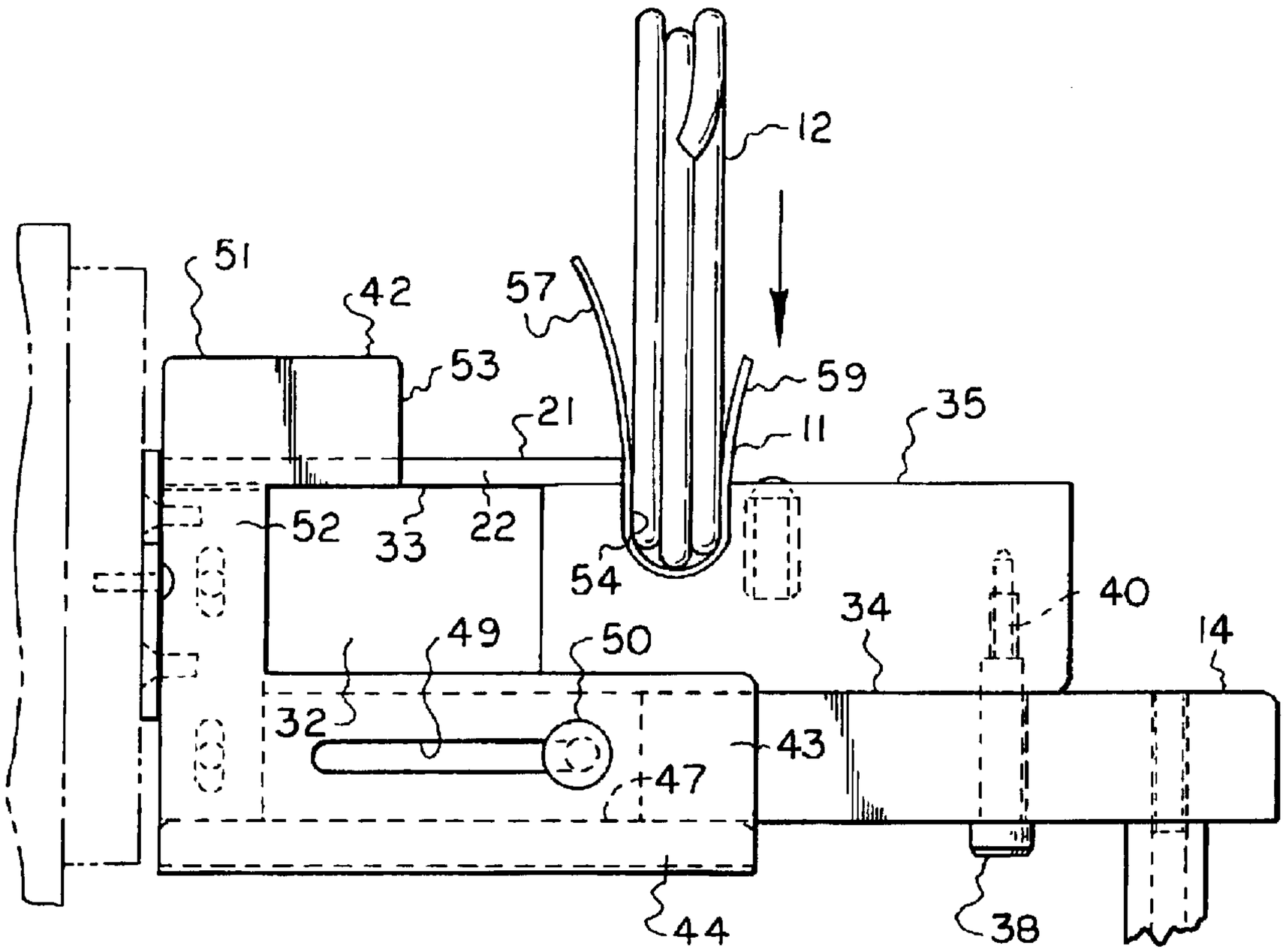
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FIG. 8

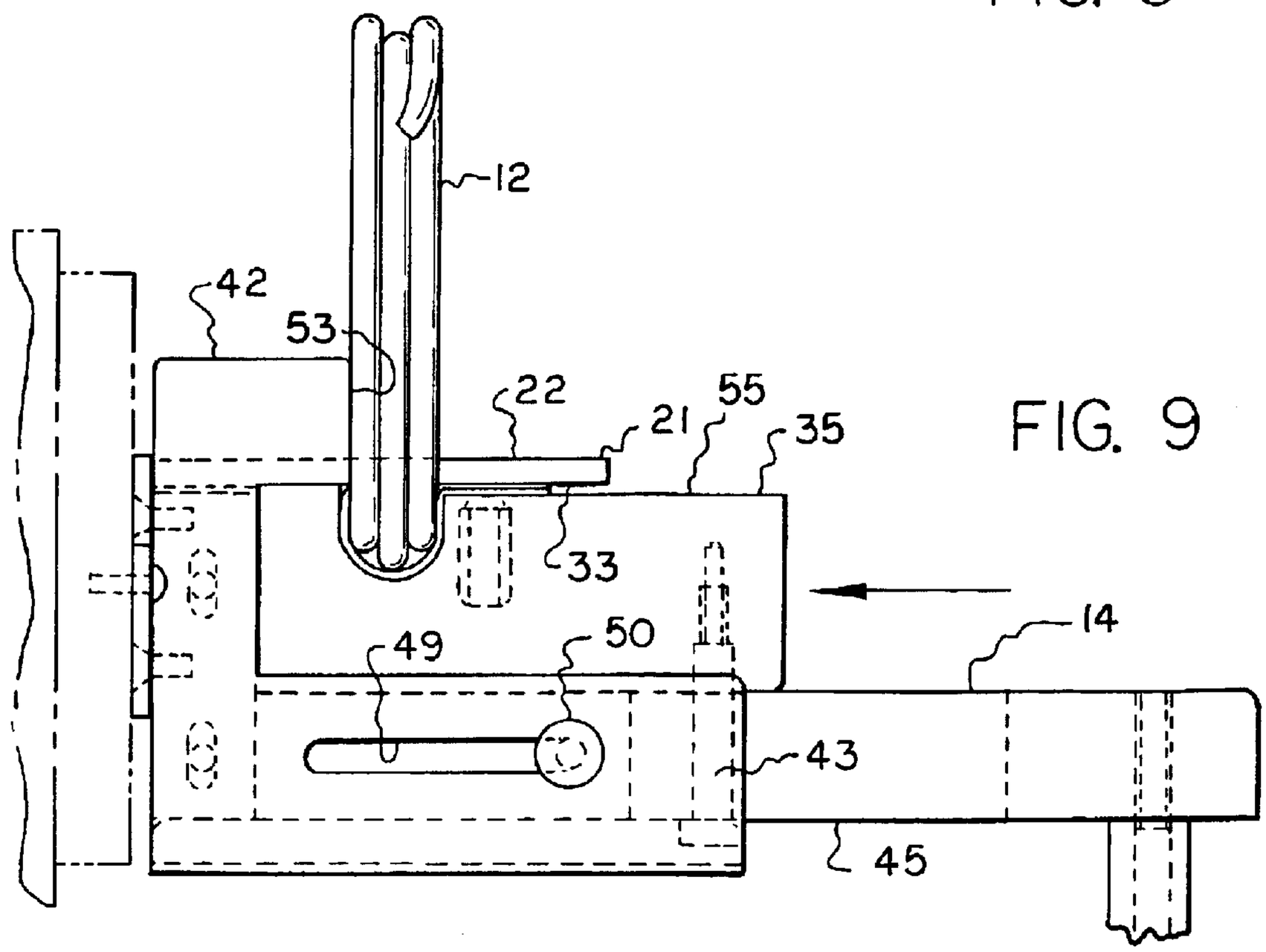
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FIG. 9

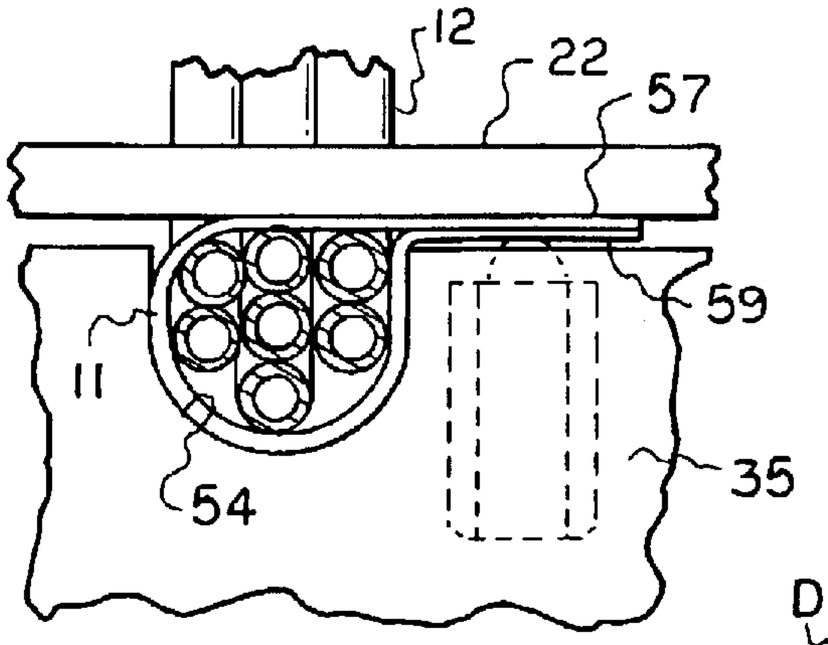


FIG. 10

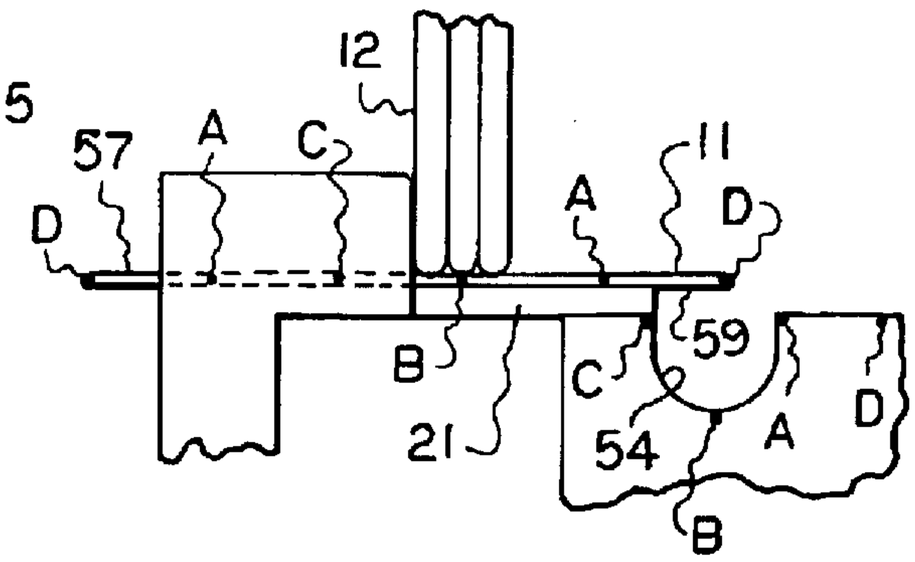


FIG. 12

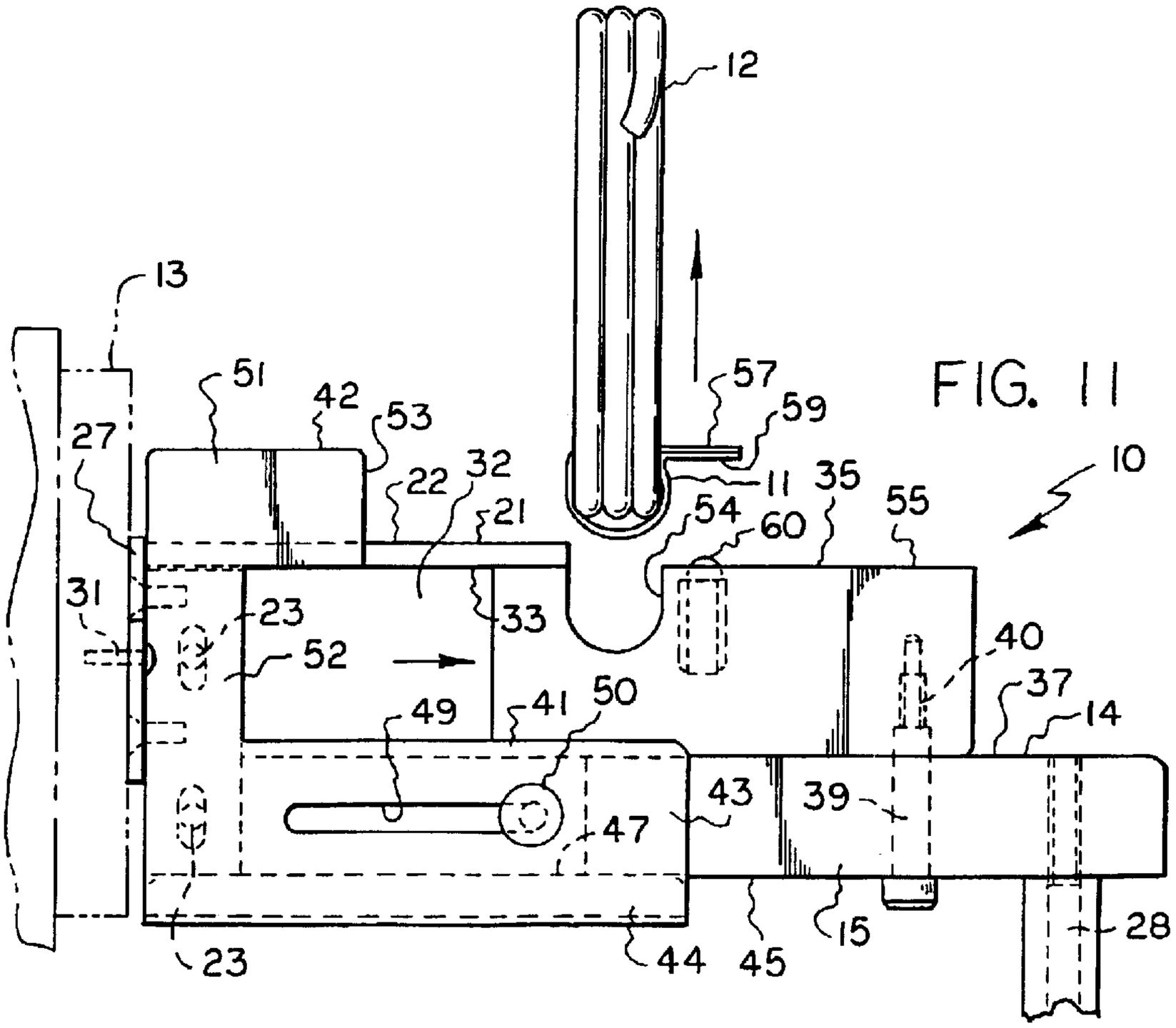


FIG. 11

METHOD OF BANDING

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is divisional of U.S. patent application Ser. No. 09/732,662, filed Dec. 8, 2000, now U.S. Pat. No. 6,557,326.

BACKGROUND OF THE INVENTION

The present invention relates to an improved banding fixture for applying a band to a workpiece such as a coil or a bundle of material and to an improved banding method.

By way of background, coiled material such as tubing, wire, flexible plastic or a bundle of material require bands to retain them in assembled condition.

BRIEF SUMMARY OF THE INVENTION

It is one object of the present invention to provide a banding fixture for a workpiece consisting of coiled material or a bundle of material wherein the fixture accepts a predetermined length of band and is manually manipulatable to cause the band to be secured around a section of the workpiece.

Another object of the present invention is to provide an improved method of banding a workpiece which involves a series of simple and efficient manipulations. Other objects and attendant advantages of the present invention will readily be perceived hereafter.

The present invention relates to a banding fixture comprising a body, a horizontal opening in said body, an overlying portion on said body overlying said horizontal opening, an undersurface on said overlying portion, a carriage movable into and out of said horizontal opening, a recess in said carriage, first and second carriage portions on opposite sides of said recess, an upper surface on at least one of said first and second carriage portions positioned in underlying near contiguous relationship with said undersurface when said recess underlies said overlying portion.

The present invention also relates to a method of banding a workpiece comprising the steps of providing a length of band having a central portion and outer end portions and a side with a cohesive substance thereon, placing said length of band on a first surface with said cohesive substance facing away from said first surface, providing a workpiece having an outer side with adjacent sides proximate said outer side and an inner side opposite to said outer side, positioning said workpiece with said outer side on said central portion of said band having said cohesive substance thereon, moving said workpiece and said band into a recess in a member to cause portions of said central portion of said band to move alongside said adjacent sides and to cause an additional portion of said central portion and one of said end portions adjacent said additional portion to extend beyond said one of said adjacent sides and to cause the other of said end portions to extend beyond the other of said adjacent sides, and moving said member past a second surface to cause said additional portion of said central portion of said band to extend across said inner surface and to cause said end portions of said band to lie in pressed cohesive engagement between said second surface and a third surface which is adjacent to said recess.

The various aspects of the present invention will be more fully understood when the following portions of the specification are read in conjunction with the accompanying drawings wherein:

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. **1** is a side elevational view of a coil of tubing which is banded by bands which have been applied by the present banding fixture;

FIG. **2** is a side elevational view of the banding fixture of the present invention;

FIG. **2**A is a side elevational view of the body of the fixture;

FIG. **2**B is a plan view of the body of the fixture;

FIG. **2**C is an end elevational view of the fixture body;

FIG. **3** is an end elevational view taken substantially in the direction of arrows **3**—**3** of FIG. **2**;

FIG. **4** is a plan view of the banding fixture taken substantially in the direction of arrows **4**—**4** of FIG. **1**;

FIG. **4**A is a side elevational view of the plate member which mounts on the body of the fixture;

FIG. **4**B is an end elevational view of the plate member;

FIG. **5** is a fragmentary cross sectional view taken substantially along line **5**—**5** of FIG. **2**;

FIG. **6** is a fragmentary side elevational view of the banding fixture with a strip of cohesive tape thereon and with an unbanded coil in an initial position against a positioning member;

FIG. **7** is a fragmentary side elevational view of the coil moved to a second position overlying a coil-receiving recess in a carriage;

FIG. **8** is a fragmentary side elevational view of the banding fixture with the coil moved into the recess in the carriage;

FIG. **9** is a fragmentary side elevational view of the banding fixture with the carriage moved to a position wherein the ends of the cohesive tape are secured to each other with the cohesive tape encircling the coil;

FIG. **10** is an enlarged fragmentary side elevational view of a portion of FIG. **9** showing in greater detail the cohesive tape encircling the coil;

FIG. **11** is a fragmentary side elevational view of the banding fixture with the carriage moved to the position wherein the coil is removed from the recess; and

FIG. **12** is a schematic view showing the dimensioning of the tape for causing the extreme edges of the tape to lie flush with each other.

DETAILED DESCRIPTION OF THE INVENTION

Summarizing briefly in advance, the banding fixture **10** and banding method are for applying bands **11** (FIGS. **1** and **11**) to a workpiece consisting of a coil **12** of tubing or any other type of coiled material or a bundle of material. The bands **11** are received in a predetermined length from a banding machine **13** of any type which can supply it. Each band, by manual manipulation and the use of fixture **10**, can then be banded about the workpiece. At this point it is to be noted that the description refers to a workpiece which is a coil of material. However, it will be understood that the workpiece can be any bundle of material whatsoever or any item which requires a band.

The banding fixture **10** includes a body **14** fabricated out of a suitable plastic material. Body **14** includes a horizontal portion **15** and a vertical portion **17** (FIG. **2**A). The horizontal portion includes an elongated slot **19** and the vertical portion includes a slot **20** which extends into horizontal

portion **15**. A plate member **21** (FIGS. **4**A and **4**B) includes a plate **22** with a depending integral vertical portion **23** which fits into slot **20** of body **14** and is secured therein by screws which extend through sides **24** of body **14** and through elongated slots **25** of vertical plate member portion **23**. A plate **27** (FIG. **3**) is secured to the end of body portion **24** by screws **29**, and plate **27** has apertures **30** (FIG. **3**) therein to receive screws **31** (FIG. **2**) for securing the fixture **10** to the band dispensing machine **13**. A leg is attached to body **14** by bolt **28**. Leg **26** rests on a supporting surface, such as a table top to stabilize the fixture **10**.

In the fully assembled condition of the fixture **10**, a horizontal opening **32** is provided between the undersurface **33** of overlying plate **22** and the upper surface **34** (FIG. **2**) of body portion **15**. A carriage **35** is slidably mounted on the upper surface **34** of body portion **15**, and it is retained against surface **34** by means of a bolt **39** which rides in slot **19**. The head **38** of bolt **39** bears on the undersurface of body portion **15**. In this respect, the bolt **39** is threaded into carriage **35** at **40**. The carriage **35** is guided for rectilinear movement on body portion **15** by the upper edges **41** of initial positioning members **42** which initially position the unbanded coil **12** on the fixture. The coil positioning members **42**, which are mirror images, include lower sides **43** which have bent over portions **44**, the upper edges **47** of which bear against the underside **45** of body portion **15**. Each side **43** includes an elongated slot **49** through which a bolt **50** extends. When tightened, the heads of bolts **50** hold sides **43** against movement on body portion **15**. The positioning members **42** include upper portions **51** which are connected to lower portions **43** by central portions **52**. The upper portions **51** terminate at edges **53** which serve as gauges for initially positioning a workpiece.

In operation, a predetermined length of cohesive tape with the bonding surface facing upwardly is dispensed from band dispensing machine **13**, and it is properly positioned on the upper surface of plate **22**. The workpiece in the form of an unbanded coil **12** (FIG. **6**) is thereafter manually placed against gauge edges **53** of positioning members **42** (FIG. **6**) with the lower outer side of the coil bearing on the central portion of cohesive surface of tape **11**. Thereafter, the coil **12** is manually moved to the right with the tape **11** along plate **22** to the position of FIG. **7** where it overlies recess **54** in carriage **35**. Thereafter, as shown in FIG. **8**, the coil is pressed downwardly into recess **54**, and portions of the central portion of tape **11** move upwardly along the sides of the coil portion in the recess. Also, a portion of the central portion of the band and its adjacent end portion extend beyond the portion of the coil in the recess, as shown on the left of the coil in FIG. **8**, and the other end portion of the band extends beyond the portion of the coil in the recess, as shown to the right of the coil in FIG. **8**. The carriage **35** is then manually moved to the left to its position of FIG. **9**. During this movement a portion of the central portion of the tape will be moved across the inner side of the coil portion in the recess **54** and the ends **57** and **59** will be placed face-to-face with each other in overlapping relationship, and the upper surface **55** of carriage **35** will lie in close contiguous relationship to the undersurface **33** of plate **22**. During the movement of the coil from the position of FIG. **8** to the position of FIG. **9**, the spring-biased balls **60**, which protrude outwardly beyond the upper surface **55** of carriage **35**, will press ends **57** and **59** of tape **11** into firm mating engagement. Thereafter, the carriage **35** is moved to the position of FIG. **11** so that the coil can be moved upwardly out of carriage-recess **54**. The diametrically opposite portion of coil **12** is then inserted into recess **54**, and the above process of banding is repeated after another band **11** has been dispensed from band dispenser **13**, and the completely applied bands are shown in FIG. **1**.

The tape dispensing machine dispenses the tape to a position on plate **21** so that when the coil **12** is placed thereon while it abuts edges **53** of positioning members **42** which serve as a gauge, the extreme end edges of the tape will be flush with each other after the band has been secured about the coil. This is schematically shown in FIG. **12** wherein the midpoint of coil **12** is placed over point B which ultimately is moved to point B at the bottom of the recess. The distance AB is shown both on tape **11** and on the recess. The distance AD is the amount of one end of the tape which is to be bonded to the opposite end of the tape. The distance BC on the tape corresponds to the distance BC in recess **54**. The distance AC on the tape corresponds to the distance AC across the opening of recess **54**. The distance AD on the left end of the tape corresponds to the distance AD on the right end of the tape such that end portions **57** and **59**, when bonded to each other, will have their outer ends at D flush with each other. According to the foregoing dimensioning, the tape **11** will assume the positions shown in FIGS. **10** and **11** when bonding has been completed. In order to achieve the foregoing with reasonable accuracy, the positioning members **42** may be adjusted by loosening bolts **50** and sliding the sides **43** of members **42** to a desired position and thereafter tightening bolts **50**. In other words, the positions of positioning members **42** can be adjusted for providing different lengths **57** and **59**, which are bonded to each other depending on the total length of the tape and its position as dispensed by dispensing machine **13**. In other words, depending on the position of the tape **11** when it is dispensed from the dispensing machine, and depending on the lengths which are desired at **57** and **59**, the positioning member **42** can be positioned such that the center of the width of coil **12** will overlie point B on the tape.

While the above description was directed to banding a workpiece in the nature of a coil, it will be appreciated that the banding fixture can be used equally well to band straight material into bundles or to apply a band to any type or types of items.

While a preferred embodiment of the present invention has been disclosed, it will be appreciated that the present invention is not limited thereto but may be otherwise embodied within the scope of the following claims.

What is claimed is:

1. A method of banding a workpiece comprising the steps of providing a length of band having a central portion and outer end portions and a side with a cohesive substance thereon, placing said length of band on a first surface with said cohesive substance facing away from said first surface, providing a workpiece having an outer side with adjacent sides proximate said outer side and an inner side opposite to said outer side, positioning said workpiece with said outer side on said central portion of said band having said cohesive substance thereon, moving said workpiece and said band into a recess in a member to cause portions of said central portion of said band to move alongside said adjacent sides and to cause an additional portion of said central portion and one of said end portions adjacent said additional portion to extend beyond said one of said adjacant sides and to cause the other of said end portions to extend beyond the other of said adjacent sides, and moving said member past a second surface to cause said additional portion of said central portion of said band to extend across said inner surface and to cause said end portions of said band to lie in prosued cohesive engagement between said second surface and a third surface which is adjacent to said recess.

2. A method as set forth in claim 1 including the step of moving said member and said workpiece beyond said second surface and thereafter withdrawing said workpiece from said recess.

3. A method as set forth in claim 1 including the prior step of moving said workpiece and said band jointly along said first surface prior to moving said workpiece and said band into said recess.

4. A method as set forth in claim 3 including the step of moving said member and said workpiece beyond said second surface and thereafter withdrawing said workpiece from said recess.

5. A method as set forth in claim 1 including the step of placing said workpiece in position relative to a gauge while positioning said workpiece on said central portion of said band.

6. A method as set forth in claim 5 including the step of moving said member and said workpiece beyond said second surface and thereafter withdrawing said workpiece from said recess.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

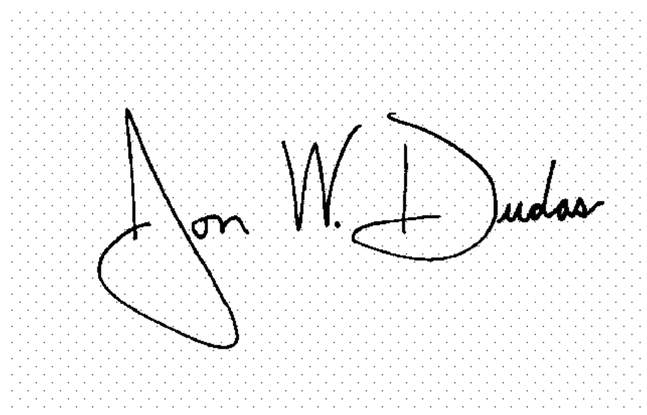
PATENT NO. : 6,807,798 B2
DATED : October 26, 2004
INVENTOR(S) : Peter A. Panneri

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Colunm 4,
Line 66, change “prosued” to -- pressed --.

Signed and Sealed this

First Day of February, 2005



JON W. DUDAS
Director of the United States Patent and Trademark Office